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10/662,793

09/15/2003

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EXAMINER

RILEY, SHAWN

ART UNIT

PAPER NUMBER

2838

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|----------------------------------------|-----------|---------------|
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3 MONTHS

02/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|--------------------------------------|----------------------------------------|--|
| Office Action Summary | Application No. 10/662,793 | Applicant(s) HESENER, ALFRED | |
| | Examiner Shawn Riley | Art Unit 2838 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on dec 2006 amendment and remarks.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendments and Remarks

Applicants state:

Bryson does not disclose a drive circuit - nor a corresponding method - for a switch in a switching converter that generates or omits drive pulses of a given duration in dependence on a comparison between a control signal and a reference signal.

Accordingly, claims 15 and 25 are not anticipated by Bryson.

This argument is not well taken. Bryson does disclose a drive circuit (42), and a method for a switch (36) in a switching converter (see, e.g., figure 1) that generates or omits (from, e.g., 42) drive pulses of a given duration (output of pfm) in dependence on a comparison (20/22) between a control signal (e.g., output of 24 into 34 and output of 34) and a reference signal (e.g., ground of 20/22 or power input(s) into amplifier 20/22 power inputs).

For at least the above reasons, this action has been made final.

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 15-28 are rejected under 35 U.S.C. §102(b) as being fully anticipated by Bryson (U.S. Patent 5,905,370). Bryson shows,¹ (in, e.g., the(ir) figures 1 and 5c and corresponding disclosure)

As to claim 15. A switching converter, comprising: a switch (36) including a control terminal, a first load terminal (drain), and a second load terminal (source); a rectifier configuration (38) connected to said switch, said rectifier configuration including a plurality of output terminals (e.g., 26 and ground) for providing an output voltage to a load (Vout); a controller configuration (connected to gate of 36, e.g., 24 or alternatively 54) for providing a control signal (e.g., output of 24 into 34 and output of 34 or alternatively output of 54 into comparator 18) dependent on the output voltage (through feedback); and a drive circuit (42) for generating drive pulses, said drive circuit comparing (at, e.g., 20/22 or alternatively at 18) the control signal with a reference signal (e.g., ground of 20/22 or power input(s) into amplifier 20/22's power inputs or alternatively for 18 with power good and/or power input(s) into amplifier 18's power inputs) in periodical time periods, and, in dependence on the comparison, providing a drive pulse (through output of 20/22 or alternatively 18) of a given duration or no drive pulse..

As to claim 16. The switching converter according to claim 15, wherein said drive circuit is configured for generating the plurality of drive pulses with an identical duration (pfm) and at an identical time interval depending on whether the control signal is greater or less than a reference

¹ Note claims will be addressed individually and the material in parentheses are the examiner's annotated comments. Further unless needed for clarity reasons, recited limitation(s), will be annotated only upon their first occurrence. Annotated claims begin with the phrase "As to claim". Claims that are not annotated are seen as having already had the invention(s) addressed previously in an annotated claim and may be repeated for convenience of the applicant/examiner. Bolded words/phrases indicate rejected material based 112 paragraph rejections. Underlined words/phrases indicate objected to material.

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signal (e.g., a ground input into 22/20/etc or power good into 16/18, e.g.).

As to claim 17. The switching converter according to claim 15, wherein said controller configuration includes a proportional controller, a proportional-integral controller, or an integral controller (via the feedback).

As to claim 18. The switching converter according to claim 15, wherein said drive circuit includes a clocked comparator configuration (oscillator 34 into 20/22) being fed with the control signal, a first reference signal (e.g., ground) and a clock signal (output of 34).

As to claim 19. The switching converter according to claim 18, wherein: the clock signal has a timing (timing is the output value of the signal); said clocked comparator configuration generates the plurality of drive pulses if the control signal is greater than the first reference signal (via output of 18/20/22); and the plurality of drive pulses each have a predetermined time duration and a timing corresponding to the timing of the clock signal (comparators respond to 34).

As to claim 20. The switching converter according to claim 15, wherein said controller configuration is a digital controller configuration providing a discrete-time control signal (24 is a digital controller).

As to claim 21. The switching converter according to claim 20, wherein: said drive circuit includes a digital comparator configuration (18 which receives 5-Bit DAC input) and a pulse

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shaping filter (see e.g., figure 5c and c=2p) connected downstream of said digital comparator configuration; and said pulse shaping filter has an output for providing the plurality of drive pulses.

As to claim 22. The switching converter according to claim 15, wherein said controller configuration includes a noise shaping filter (C1) being fed with a signal dependent on the output voltage.

As to claim 23. The switching converter according to claim 15, further comprising: a level converter (22) having an input being fed with the plurality of drive pulses and an output connected to said control terminal of said switch.

As to claim 24. The switching converter according to claim 15, wherein said rectifier configuration includes a coil (L1) connected in series with said switch.

For method claim 25, note that under MPEP 2112.02, the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Therefore the previous rejections based on the apparatus will not be repeated.

25. A method for driving a switch in a switching converter having a rectifier configuration connected to the switch, the method which comprises: generating a control signal dependent on an output voltage provided by the rectifier configuration; and comparing the control signal

with a reference signal in periodical time periods to form a comparison result; and generating a drive signal with drive pulses and, depending on the comparison result, providing a drive pulse of a given duration or no drive pulse.

As to claim 26. The method according to claim 25, which comprises: providing the control signal with a signal component formed by integrating a differential signal made from a signal proportional to the output voltage and a reference signal (e.g., output C1 is integrated at VFB and feedback into 16 which is compared with IFB).

As to claim 27. The method according to claim 25, which comprises: providing the control signal with a signal component proportional to the output voltage (based on value of feedback versus a reference value).

As to claim 28. The method according to claim 25, which comprises forming the drive pulses with a timing of a clock signal depending on whether the control signal is greater or less than a reference value (via the feedback circuitry).

Allowable Subject Matter

3. No claims are allowable over the prior art of record.

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Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry from other than the applicant/attorney of record concerning this communication or earlier communications from the Examiner should be directed to the Patent Electronic Business Center (EBC) at 1.866.217.9197. Any inquiry from a member of the press concerning this communication or earlier communications from the Examiner or the application should be directed to the Office of Public Affairs at 703.305.8341. Any inquiry from the applicant or an attorney of record concerning this communication or earlier communications from the Examiner should be directed to Examiner Riley whose telephone number is 571.272.2083. The Examiner can normally be reached Monday through Thursday from 7:30-6:00 p.m. Eastern Standard Time. The Examiner's Supervisor is Karl Easthom who can be reached at 571.272.1989. Any inquiry about a case's location, retrieval of a case, or receipt of an amendment into a case or information regarding sent correspondence to a case **should be directed to 2800's Customer Service Center** at 571.272.2815. Any papers to be sent by fax MUST BE sent to fax number **571-273-8300**. Any inquiry of a general nature of this application should be **directed to the Group receptionist** whose telephone number is 571.272.2800. Status information of cases may be found at <http://pair-direct.uspto.gov> wherein unpublished application information is found through private PAIR and published application information is found through public PAIR. Further help on using the PAIR system is available at 1.866.217.9197 (Electronic Business Center).

January 07



Shawn Riley
Primary Examiner